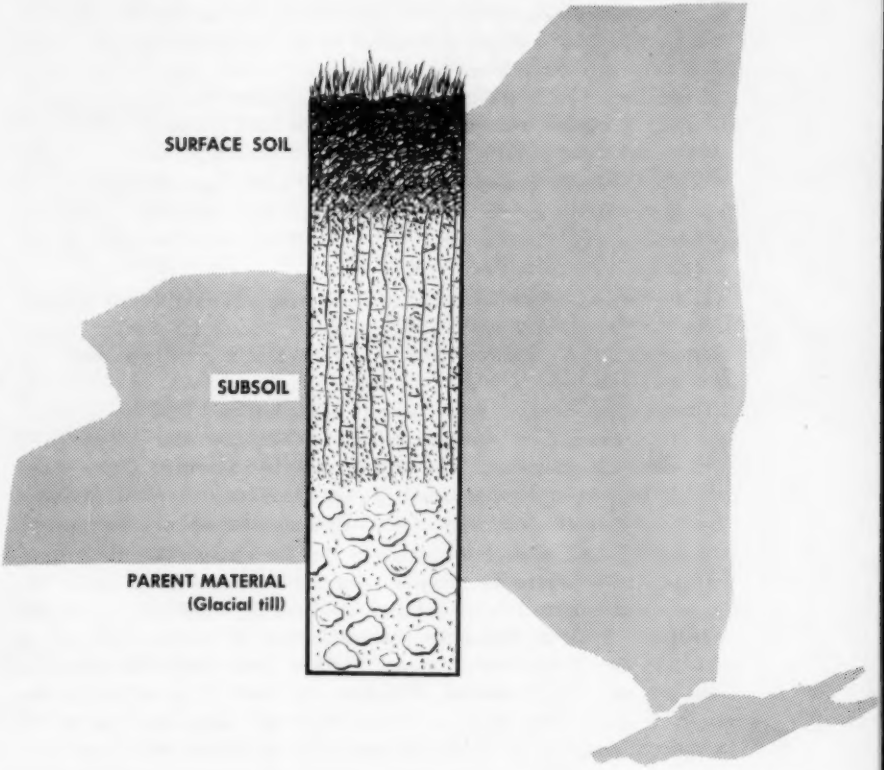
CORNELL EXTENSION BULLETIN 904

LAND JUDGING in New York State



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LAND JUDGING in New York State

HUGH M. WILSON AND WILLIAM L. GARMAN

EACH soil as well as each field has certain recognized characteristics that determine its capabilities and limitations. The use that can be made of a piece of land is largely determined by the way nature made it. Many of its physical features cannot be changed to any extent. Some of these physical features are assets while others may be liabilities. To take advantage of the assets and either overcome the liabilities or learn to live with them, you must recognize soil characteristics and understand their importance.

While textbooks provide information on soils, practical experience is needed to identify and to evaluate them. Such experience can be obtained in a land-judging school or contest. You don't need to be an expert to participate and it is a lot of fun.

Land judging, which has attracted widespread attention, began in Oklahoma. It started with small land-appreciation schools for Future Farmers of America (FFA) and for 4-H Clubs. From that it grew into county and then state-wide contests. Now it has become a national event. In 1953 nearly 2000 contestants from 15 States took part in the National Land Judging Contest at Oklahoma City. Contestants were divided into four groups: FFA, 4-H, Collegiate, and Adult. The interest and the enthusiasm shown would need to be seen to be appreciated. Teachers, agents, and technicians agree that it is a most effective way to teach soil conservation and soil management.

Land is judged in much the same way that livestock are judged. A scorecard is used for both. Decisions are reached by sight and by touch. The land-judging scorecard developed for New York State (inserted) is divided into three parts. In Part I the physical features of the land and soil are rated. In Part II decisions are made as to how these physical features affect land use and crop production. The final step, Part III, is to help persons to decide on the most intensive rotation or the best use of the land and the treatments needed to maintain soil productivity and to prevent erosion.

Persons learn more at land-judging schools if they have some reference material. To successfully conduct a school, some preparation is needed and a few suggestions may be helpful. This bulletin offers the following help:

(1.) A sample scorecard, inserted separately, (2.) definitions and explanation of terms and words used in the scorecard, and (3.) suggestions for organizing and conducting a school.

LAND JUDGING SCORECARD

Field No. _____

1. Name or No. _____
2. Address _____
3. County or School _____

Extension Service
N. Y. State College of Agriculture
Cornell University
Ithaca, N. Y.

PART I—PHYSICAL FEATURES OF THE LAND AND SOIL (Indicate answer by x in the square)

SURFACE SOIL

TEXTURE
- ☐ Coarse
- ☐ Medium
- ☐ Fine

COLOR
- ☐ Brown
- ☐ Gray
- ☐ Black

STONINESS
- ☐ Slight
- ☐ Moderate
- ☐ Excessive

pH
- ☐ Above 6.5
- ☐ 6.0-6.5
- ☐ 5.5-5.9
- ☐ Less than 5.5

SUB-SOIL

TEXTURE
- ☐ Coarse
- ☐ Medium
- ☐ Fine

MOTTLING
- ☐ None
- ☐ Below 14"
- ☐ Above 14"

STRUCTURE
- ☐ Granular
- ☐ Blocky
- ☐ Platy
- ☐ Single grain

pH
- ☐ Above 6.5
- ☐ 6.0-6.5
- ☐ 5.5-5.9
- ☐ Less than 5.5

SLOPE

PERCENT	LENGTH
☐ A. 0-3	☐ Long
☐ B. 4-8	☐ Medium
☐ C. 9-15	☐ Short
☐ D. 16-25	
☐ E. Over 25	

PROFILE PERMEABILITY

- ☐ Rapid
- ☐ Moderate
- ☐ Slow

Possible score 100
Number answers missed x 4=____
Your score ____

PART II—HOW PHYSICAL FEATURES AFFECT LAND USE AND CROP PRODUCTION

DEGREE OF WETNESS
- ☐ Not wet
- ☐ Wet for short periods
- ☐ Wet for long periods

MOISTURE AVAILABLE TO PLANTS
- ☐ High
- ☐ Medium
- ☐ Low

DEPTH TO WHICH ROOTS CAN PENETRATE
- ☐ Deeper than 30"
- ☐ 15"-30"
- ☐ Less than 15"

EROSION HAZARD WHEN CULTIVATED
- ☐ None to slight
- ☐ Moderate
- ☐ Severe

LIME NEEDED TO INCREASE pH OF SURFACE SOIL TO 6.5
- ☐ None
- ☐ Less than 2 tons
- ☐ 2 to 3 tons
- ☐ More than 3 tons

EASE OF CULTIVATION
- ☐ Not difficult
- ☐ Moderately difficult
- ☐ Difficult

LAND USE CAPABILITY CLASS

I II III IV V VI VII VIII
(Circle one)

(over)

First Edition

LAND JUDGING SCORECARD

PART III TREATMENTS RECOMMENDED TO MAINTAIN PRODUCTIVITY AND PREVENT EROSION ON THE FIELD

CROPPING SYSTEMS

☐ Very intensive use:
  a. Continuous row crops with crop residues, extra nitrogen and/or manure plowed down.
  b. Intensive cultivation with occasional legume sod and/or manure plowed down.

☐ Use a rotation in which a legume and/or grass sod is on the land at least 30% of the time.

☐ Use a rotation in which a legume and/or grass sod is on the land at least 50% of the time.

☐ Seed a winter cover crop on row crop land that can be managed for spring plowing.

☐ Plow occasionally—but mainly for reseeding adapted legume and grass mixtures.

☐ Keep in permanent well-managed pasture—renovate where practical for reseeding.

☐ Plant recommended trees or manage present stand. Protect from fire and grazing.

☐ Develop for wildlife.

MECHANICAL

☐ None
☒ Plow and plant on the contour or cross slope
☐ Strip crop or field strip
☐ Construct diversion ditches
☐ Build cropland terraces
☐ Use open ditch drainage
☐ Tile drain
☐ Remove boulders

FERTILIZER RATIO NEEDED FOR _____
(Consider that manure and crop residues are used in the rotation)

☐ 0-1-0
☐ 1-0-0
☐ 0-1-1
☐ 0-1-2
☐ 1-2-1
☐ 1-2-2
☐ 1-1-1
☐ - -
☐ - -

OTHER MANAGEMENT PRACTICES FOR THIS FIELD:

Complete Soil Test Data:

O. M. _____ P _____ K _____

Definitions and Explanation of Terms Used on Scorecard

Part I.

Physical Features of the Land and Soil (An Inventory of Soil Conditions Found on the Field)

Texture

The texture of a soil is determined by the proportion of sand, silt, and clay that it contains. Thus *coarse-texture* soils are sandy or extremely gravelly; those of *medium texture* contain much very fine sand and silt with smaller amounts of clay; *fine-texture* soils have a high proportion clay and less silt or very fine sand. Texture is determined in the field most easily by pressing or rubbing wet soil between the fingers. You must examine and classify separately both the surface soil and the subsoil, for they may differ in texture.

- *Fine* refers to clayey soil that is plastic and sticky when wet. If pressed between fingers and thumb, it forms into a ½-inch or longer thin "leaf." When the soil is dry, small clods are almost impossible to break. Fine-texture soils include the clays, clay loams, and silty clay loams.
- *Medium* refers to soil that when wet feels floury or loamy between the fingers. It can be rubbed into a short "leaf," usually less than ¼ inch in length, which breaks up readily. Dry clods can be broken without much trouble. Silt loam, loam, and very fine sandy loam soils are classified as medium-texture soils.
- *Coarse* refers to soil that feels gritty. It will not "leaf," and dry clods are easily broken. Sand, loamy sand, and sandy loam are coarse-textured.

Texture is important because of its effect on management and water-holding capacity. Fine-texture soils have high water-holding capacity and usually have high potash-supplying power. If, however, the organic-matter content is low, the rate of water intake is slow and erosion may be serious even on gentle slopes. Surface soil may puddle or become cloddy and difficult to till when too wet. Fine textures are frequently found in the subsoil of high lime soils and in soils formed from lake-bottom deposits.

Medium-texture soils have more virtues and fewer faults than either the fine or the coarse soils. These soils are more often in good tilth, are easy to work, and have more favorable water relations than the others. Fortunately a high proportion of New York soils are medium texture.

Coarse-texture soils are easy to work but have low to very low nutrient-supplying ability. They do not crust so readily as the medium or fine textures. They absorb water readily and are frequently drouthy. If acid, they require frequent applications of lime; although the amount of lime required to neutralize the acid is less than in fine-texture soils.

Color and Mottling

The color of the topsoil and the presence or absence of mottling in the subsoil are indications of soil drainage. Differences between the color of the surface of well-drained and somewhat poorly drained soils are often difficult to observe, because the high organic-matter content masks color differences. Most well- and moderately well-drained soils have a uniform light or dark-brown color when moist, but some may be various shades of red or yellow. Brown on the scorecard includes these reddish and yellowish shades. A dark grayish brown when wet or light gray when dry denotes impeded and poor drainage for long periods. A black surface usually indicates that the land is naturally wet for very long periods.

Mottling in the subsoil, which looks like rust spots, is another sign of poor drainage. The mottling is caused by oxides of iron.

Both color and mottling are easy to see when the soil is moist, but tend to fade when it is dry. They are, however, most easily identified by placing a sample of well-drained soil beside one where drainage is poorer. The depth at which the gray or mottled zone appears denotes the degree of drainage.

- *Good drainage.* There is some uniform shade of brown color throughout the topsoil and subsoil. These soils dry out quickly and can be farmed soon after it rains.
- *Moderate.* The surface is brown or some shade of brown and there is a gray or mottled zone often up to within 14 to 20 inches of the surface. These soils are wet for short periods following rains, and tillage is sometimes delayed in the spring.
- *Poor.* The surface is dark grayish brown or gray and there is a gray or yellow mottling to within 6 to 14 inches of the surface. This soil is wet for long periods and spring cultivation is frequently a problem.

The slope of the land is a good indication of drainage. The tops of ridges or hills, where excess water can drain off readily, are usually moderate to well drained. Imperfect or poorly drained soils are found on long side-hill slopes where the land tends to flatten out. Very poorly drained land is found in depressions and seep spots. Poor drainage delays field work and limits the number of crops that can be produced. Meadows and winter cover crops are frequently injured by heaving. Root growth and crop yields are usually better on well-drained soils.

Stoniness

In rating surface stoniness, consider only the rocks that are large enough to interfere with farming operations. Stones present additional hazards to the operation of complex farm machinery.

- *Slight* indicates that there are not enough rocks or gravel to interfere with tillage or harvesting machinery.
- *Moderate* indicates that stones are frequent enough and large enough to interfere with tillage and harvesting machinery.
- *Excessive* indicates that stones or boulders are so large and frequent that they prohibit farming operations.

Structure of Subsoil

Soil structure refers to the way in which individual soil particles are combined into clusters (aggregates) and separated from other clusters. The type of structure has a tremendous effect on the permeability of a soil. Unlike topsoil, which may be improved by organic matter, subsoil structure is difficult to improve. Pressure and vibration of heavy equipment over wet soil often destroys good structure by causing it to break down.

The four primary types of structure commonly found in New York are: *granular, blocky, platy,* and *single grain.* You may classify the structure by breaking fragments of soil to determine the lines of weakness or cleavage. The following table gives examples of structure and indicates its effect on the movement of water through the soil.

Type	Appearance	Description	Rate of water movement through the soil (permeability)
Granular		Rounded crumbs usually loose. More common in topsoil but frequently found in subsoils.	Moderately rapid. From 2.5 to 5.0 inches per hour
Blocky		Irregular blocks with three more or less equal dimensions, or composed of angular fragments. Common in heavy subsoils.	Moderate. From 0.8 to 2.5 inches per hour
Platy		Horizontal plates that give a shingle effect. Usually found directly beneath the surface soil but may be in other parts of profile.	Slow. From 0.05 to 0.20 inch per hour
Single grain		No definite arrangement of particles into aggregates. May be very loose, as with loose sand.	Very rapid to excessive. More than 5.0 inches per hour

Subsoil structure has a direct relationship to soil productivity, soil permeability, and root growth. The capability of any soil for the growth of plants and its response to management depends as much on its structure as on its fertility.

Figure 1. The pH Test Kit

With this pH Test Kit, one can easily check his soil to determine whether it is "sweet" or "sour."

pH or Lime Level

The pH value of a soil is a numerical measure of the hydrogen ion concentration and therefore of the active acidity or alkalinity. You can easily determine pH by observing the color changes when you place indicator dyes on the soil. Kits to determine pH or lime level can be obtained from your local county agricultural agent, vocational agricultural teacher, commercial concerns, or by writing directly to the Department of Agronomy at Cornell University.

Instructions and color charts are enclosed with the kits. Following are rough interpretations of pH values:

Neutral range—from 6.6 to 7.5
Slightly acid—from 6.1 to 6.5
Moderately acid—from 5.5 to 6.0
Strongly acid—less than 5.5

Plant-food nutrients are tied up and unavailable in an acid soil. Aluminum and manganese ions accumulate that are toxic to plants. Bacteria which fix nitrogen from the atmosphere and those that release nitrogen from organic matter do not thrive in soils of less than pH 6.0. Applying lime to correct

acidity increases yields of practically all crops in the rotation. Efficient crop production with few exceptions is impossible on acid soils.

Slope

Slope is the number of feet rise in each 100 feet of horizontal distance (per cent). If any Abney level is not available, percent of slope can be measured by using a string that is 100 inches long, a line level, and a yardstick. In this method one person holds one end of the cord on the ground. Another person takes the other end of the cord and pulls it tight. A line level is hung midway between the two ends. At the down-slope end, the yardstick measures the vertical distance from the end of the level cord to the ground. This vertical distance in inches is equal to the slope of the ground in percent since the string is 100 inches long.

Slope Group		Percent Slope
A	Nearly level	0 to 3
B	Gently sloping	4 to 8
C	Moderately sloping	9 to 15
D	Strongly sloping	16 to 25
E	Steep	More than 25

Slope affects farming operations and is important in terms of erosion control. When a slope is doubled, the velocity of runoff water is increased 4 times and its cutting power 64 times. On the other hand, some slope is beneficial on soils with slowly permeable subsurface layers.

The length of slope may be as important as the steepness. On long slopes water from above collects on the lower parts of the watershed and causes erosion and wet land.

Definition of slope lengths are:

- *Short*—less than 300 feet
- *Medium*—from 300 to 1000 feet
- *Long*—more than 1000 feet

Profile Permeability (Ease of Air and Water Movement)

Profile permeability refers to the rate at which water and air can move through the whole soil profile. It affects the rate of water intake, the moisture-holding capacity, the depth of root penetration, and the degree of drainage. Rapidly permeable refers to soil which is excessively drained and usually drouthy and leachy. Moderately permeable is most desirable. Slowly permeable soils are usually problem soils, since topsoil soon becomes saturated in wet weather, air is excluded, and cultivation is limited.

The texture and structure of the subsoil govern a soil's permeability.

- *Rapid* refers to soils that have sandy or gravelly subsoils with loose single grain structure.

- *Moderate* refers to subsoils that have well-defined, blocky, or angular structure. Fragments are easy to crush in the hand and may be somewhat granular or crumbly.
- *Slow* refers to medium- to fine-texture subsoil with dense or platy structure, often underlain by hardpan.

Part II.

How Physical Features Affect Land Use and Crop Management

This portion of the scorecard is designed to show how the conditions shown in Part I affect crop production and land capabilities.

Degree of Wetness

To determine the degree of wetness, consider the color of the surface soil, the presence (or absence) of mottling in the subsoil, the depth at which mottling is found, the structure of the subsoil, and the slope of the land.

- *Not wet* means that the soil is naturally well drained.
- *Wet for short periods* represents moderate drainage.
- *Wet for long periods* indicates poor drainage.

Moisture Available to Plants

Moisture available to plants refers to the amount of available water that can be stored by a soil for use by plants. This is important because from 250 to 600 pounds of water are required to produce 1 pound of plant dry matter. Since normal summer rainfall does not supply enough moisture for rapidly growing plants, maximum crop yields may depend upon the soil's ability to absorb and hold available water until it is needed. In general, the coarser the soil the lower the moisture-holding capacity. Thus texture of the surface soil and subsoil are of primary importance. Other things to consider are: depth to which roots can penerate, structure of subsoil, degree of drainage, permeability, amount of past erosion, and, in some cases, slope of land.

Depth to Which Roots Can Penetrate

The effective depth of a soil is determined by the total thickness of soil layers readily penetrated by plant roots. The roots of many crops penetrate to a depth of 2 feet or more if soil conditions permit. In a deep soil, plants withstand drouth better since the moisture-storing ability of a soil is related to its depth. Likewise minerals stored in the subsoil are used by plants if roots can reach them. The depth to which roots can penetrate may be limited by: bedrock, poor drainage, hardpan, very firm platy or dense clay subsoil.

Depth classes are:

- *Deep*—more than 30 inches
- *Moderate*—from 15 to 30 inches
- *Shallow*—less than 15 inches

Figure 2. Moderate Erosion

Moderate sheet and gulley erosion have carried away much of the fertile topsoil on this Wyoming County farm. Slope is about 8 percent. Background area, which is nearly level, has no appreciable erosion.

Erosion Hazard when Cultivated

Erosion is the loss of soil by water and wind. It is sometimes a selective process that removes the finer and more fertile soil particles. With only moderate erosion, more plant food may be lost than is used by the crop and the water-holding capacity of the soil may be greatly reduced.

Land in good sod or woods, which has little erosion hazard at present, may be seriously affected if incorrectly plowed and cultivated.

In some parts of the country, erosion losses are judged by measuring the depth of the topsoil. This method is not reliable in New York because the original topsoil was never very deep. A common mistake is to assume that the darker colored furrow slice represents the depth of the topsoil. Actually this may be a mixture of topsoil and subsoil. Therefore, instead of judging soil losses by depth of topsoil it is more satisfactory to observe conditions that are a result of erosion. Following are some observations that help to determine the amount of soil lost:

- *None to slight*—No evidence of rills or gullies; no soil accumulated above fence rows or in low spots; land that is nearly level or has been in permanent cover.
- *Moderate*—Soil deposited in channels, low spots, and above fences; depth to unweathered material deeper in some places than in others; greater

Figure 3. Severe Erosion

Severe erosion has destroyed this field for rotation cropland use. Slope is 18 percent. Note the diversion terrace above the field to help stabilize gullies while permanent pasture is being developed.

accumulation of coarse rock fragments on the surface; color or texture of surface soil may show mitxure of subsoil; an erosion pattern of waterways may have developed since the land was cleared. Even though these indications are not pronounced, it can usually be assumed that sloping land which has been plowed in regular rotation has had at least moderate erosion.

- *Severe*—All or nearly all of the original topsoil and some of the subsoil removed; active sheet erosion, rills, or gulleys present. Soil deposition at the foot of the slope and above fences; a definite erosion pattern of waterways; a rock pavement on stony or gravelly land; productivity seriously reduced.

Percent of slope, length of slope, method of farming, amount of cover, soil texture, soil structure, and soil drainage all influence past and future erosion hazards.

Lime Needed to Increase pH of Surface Soil to 6.5

The amount of lime required to increase the surface soil to a pH of 6.5 depends upon the degree of acidity and the texture of the surface soil. After testing for pH and determining texture, determine the tons of lime required from the following table:

Tons of Lime required to Raise the pH of the Plow Layer to 6.5

Texture	Degree of Acidity		
	Slight 6.1 to 6.5	Moderate 5.5 to 6.0	Strong less than 5.5
	Tons		
Coarse	½ to 1	1 to 2	2 to 3
Medium	1 to 2	2 to 3	3 to 6
Fine	2 to 3	3 to 4	4 to 10

Ease of Cultivation

Stoniness, slope, degree of wetness, and amount of past erosion affect the ease of cultivation. In some cases other things, such as hedges, stone walls, and cradle knolls, need to be considered.

Land-use Capability Class

Land-use capability classification is based upon the capability of the land to produce under different levels of management and erosion control.

Of the eight land classes, Class I is the best and the others decrease in intensity of use to Class VIII which is the poorest from the standpoint of crop production. This classification differs from the Cornell Economic Classification in that it considers only the land and does not take into account buildings, location, or other variables. Land-use capability does not refer to a farm and sometimes not even to an entire field since different parts of the same field may have different capabilities.

Figure 4. Land Classes I, III, VI, and VII

The Class I land in the valley is well drained, level, and highly productive under good management. The Class III land in the foreground is productive when carefully managed, is subject to moderate erosion, and is on a slope of about 10 percent.

The steep land in the background (slope 15 to more than 25 percent) is Class VI and VII. The less steep parts can be developed for permanent pasture, the rest for timber production.

Land-use capability classes are dependent upon such physical features of land and soil as depth, drainage, slope, permeability, texture, and erosion. The colors that are used on maps by the Soil Conservation Service to show the different classes are included in the following description:

Land suitable for cultivation

- *Class I* (green on maps)—Land having soils that are deep, well-drained, and adapted for intensive cultivation. It is easy to work, nearly level and not subject to erosion.
- *Class II* (yellow)—Land that requires somewhat more careful management than Class I to maintain highest productivity. It is mostly gently sloping (from 3 to 8 percent), moderately subject to erosion, and may have soil that is only moderately well drained.
- *Class III* (red)—Land that requires most careful management to maintain productivity. It is usually moderately sloping (from 9 to 15 percent) and is subject to from moderate to severe erosion. Some land that is only gently sloping but somewhat poorly drained belongs in this class. Maintaining fertility is more difficult than on Class I or Class II land.
- *Class IV* (blue)—Land that is very difficult to manage under cultivation. Because of strong slope (from 16 to 25 percent), poor drainage, shallow or excessively drouthy soils, such land is suitable only for occasional cultivation.

Figure 5. Land Classes II, III, and IV

The Class II land in the foreground can be easily managed by cross-slope farming. The Class III land in the background is being well managed by a system of strip-cropping.

The land in the center of the photograph is on a steep 17 percent slope that can be occasionally cultivated but is better suited to hay or pasture. This is Class IV land.

Land suitable for pasture

- *Class V*—Nearly level land that, because of one physical characteristic, is best suited for meadow, pasture, or forest. The most frequent limitation is flooding or excessively stony conditions. Here in New York State the Soil Conservation Service has included such land in either Class IV, VI, or VII.
- *Class VI* (orange)—Land that cannot be managed for cropland. Because of steep or irregular slopes, stones, or wetness such land should be kept in permanent cover except when pasture renovation is necessary.

Land best suited for forest and wildlife

- *Class VII* (brown)—Best suited for forestry or wildlife usually because of excessively steep slopes or very shallow soil.
- *Class VIII* (purple)—Use limited to wildlife or recreation. Usually barren rockland or marsh.

Figure 6. Land Class VIII

This barren rocky slope is useful only for wildlife or for recreation. It is Class VIII land.

Part III.

Treatments Recommended to Maintain Productivity and to Prevent Erosion on the Field

The previous two parts of the scorecard considered the physical properties of the soil and how these physical features affect the use of the land. Now most careful judgment should be given to determine the kinds of treatments that should be used to maintain the productivity of the land and to prevent erosion. This part of the scorecard is divided into *cropping systems, mechanical treatments, and fertilizer ratios* needed *for specific crops.*

When rating a field, one should pay no attention to existing treatments or to the present land use; rather, recommendations should be based on the highest and most intensive use for which the land is suited.

One should check one or more of the items under each of the three major headings. The person conducting the school or contest will supply the complete soil-test information and the crop that is to be considered for each field. The fertilizer ratio needed for this crop should be checked after a consideration of the soil test information and of Cornell fertilizer recommendations. Proper fertilizer ratios under different conditions are given in Cornell Extension Bulletin 780. If soil test information is not available, the results obtained from a similar soil in the area may be used.

Other management practices, such as fence relocation or field re-arrangement, that are needed, may be made in the space provided at the bottom of the scorecard. This should be used at the discretion of the teacher or person in charge of the school.

Since land may be in a given capability class for various reasons, judgment is required in selecting the most intensive cropping system and the necessary treatments. Some or all of the following may be included:

- *Class I*—Good farming, including adequate fertilizer and enough organic matter to maintain soil structure.
- *Class II*—Good farming plus simple measures such as: contouring, a few tile, an occasional open drainage ditch or diversion ditch terrace. May be desirable to keep in sod at least 30 percent of the time.
- *Class III*—Good farming and intensive treatments such as: longer rotations in which the land is in sod at least 50 percent of the time, strip-cropping, regularly spaced diversions, cropland terraces, systematic tile, or open ditch drainage.
- *Class IV*—Special emphasis on seeding mixtures and fertilization that will permit the land to be in good sod most of the time. Mechanical treatments are usually not practical.
- *Class V*—Not used in New York.

- *Class VI*—Keep in permanent well-managed pasture. Renovate where practical.
- *Class VII*—Plant recommended trees or manage present stand. Protect from fire and grazing.
- *Class VIII*—Develop for wildlife where practical.

How to Organize and Conduct a Land-judging School

While the widest use of a land-judging school may be with youth groups such as Future Farmers of America and 4-H clubs, adults may participate. A competitive interest can be developed by organizing teams similar to stock-judging teams. Local organizations, such as Service Clubs and fertilizer dealer associations, may be interested in sponsoring special contests and offering prizes for winners.

Advance preparations

1. Carefully read this bulletin on land judging. Make sure that you have a clear understanding of the scorecard and the terms that are used. Scorecards can be obtained from the Mailing Room, College of Agriculture, at Cornell University, Ithaca, New York.

2. If extra assistance is needed, locate a qualified advisor to help select fields and decide conditions.

3. Select three or four field locations that have different soil conditions where pits can be dug. If possible these should be within walking distance of each other. They may be in crop fields, meadows, pastures, or abandoned land.

4. Obtain permission of property owner to dig such pits.

5. Assemble reference material and teaching aids.

Final arrangements

1. Dig the pits. A slit trench 3 feet deep is adequate and can be dug with a tractor-mounted backhoe, shovel, or blade. For groups of more than 30 persons, dig more than one pit in each field to be judged.

2. Determine and mark the boundaries of the field for which the pit is representative. You may mark the boundaries with pieces of white cloth.

3. Make an official scorecard for each field by examining the soil and checking the right answers.

4. Identify each pit with a sign marked *Field* 1, *Field* 2, and so on. On these signs list the information that the group needs to know to reach decisions.

5. Provide two boxes at each pit to hold samples of topsoil and subsoil. Also provide a dropper bottle of water to moisten soil samples.

6. As a safety measure cover the pits with boards until they are ready to be used.

7. Freshen the profile of each pit with a spade just before the group is brought to the field. Place generous samples of the topsoil and subsoil in the boxes and, if necessary, moisten them. Make certain that enough lime-testing kits are available.

Conducting the School

1. Set aside the entire day.

2. Hold a 2-hour session in the morning at some convenient school or meeting place to establish the ground rules of the school. Explain the score-board and how it is used. Illustrate varying soil conditions and tell why they are important. Demonstrate judging and testing techniques. Slides, films, bulletins, and other teaching aids may be useful.

3. After lunch proceed to the field. Plan to spend not more than 30 minutes at each field.

4. If the group is larger than 30 persons, divide it into sections. Each section should have a guide who has been briefed on conditions and is familiar with the scorecard.

5. It may be necessary to show inexperienced groups how to proceed. In that case the guide should demonstrate how to identify soil properties, rate them on the scorecard, and prescribe treatments. Use the soil samples in the boxes to determine texture, color, pH, and the like. Examine the pit for depth, structure, and so forth. Make sure that everyone handles the soil and gets the "feel or it."

6. Be sure each participant fills out a scorecard for each field he judges. Review the cards and correct them on the spot or collect them for future rating.

Rating the scorecards

Any system of rating can be used. Possibly the simplest is to give each perfect card a mark of 100. Subtract 4 for each incorrect answer. Local conditions may make it desirable to stress some condition. In that case, if the answers to important items are wrong, subtract 8. If the answers on pH and land-use capabilities are wrong, it is recommended that the double penalty be used.

Assistance available

1. Soil scientists from the Soil Conservation Service can be helpful in selecting sites and analysing soil conditions.

2. SCS planning technicians may suggest desirable treatments.

3. County agricultural agents and vocational teachers may help to organize and conduct schools.

4. Specialists in soil conservation and agronomy, from the Cornell Extension Service, will help conduct a limited number of schools.

5. Complete soil tests can be obtained through the local County Agent's office or the Soil Testing Division, Department of Agronomy, Cornell University, Ithaca, New York.

6. Cornell lime testing kits may be purchased from the local county agricultural agent or from the Department of Agronomy, 150 Caldwell Hall, Cornell University, Ithaca, New York.

7. Scorecards may be obtained from the Mailing Room, Roberts Hall, Ithaca, New York.

8. Slide sets and other teaching aids are available on loan from the Department of Extension Teaching and Information, New York State College of Agriculture, Cornell University, Ithaca, New York.

9. Further information on land-judging may be obtained by writing the authors of this bulletin, at the New York State College of Agriculture at Ithaca, New York.

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